

Amdt. dated August 15, 2005
Reply to Office action of June 15, 2005

Serial No. 09/972,207
Docket No. SJO920010097US1
Firm No. 0037.0096

REMARKS/ARGUMENTS

The Examiner rejected claims 1-20 as anticipated (35 U.S.C. §102(b)) by Lagueux (U.S. Patent No. 6,538,669). Applicants traverse with respect to the amended claims.

Claim 1 recites a storage area network (SAN), comprising a plurality of storage devices; a plurality of digital data processors, each having a file system that effects access to one or more of the storage devices coupled to the SAN; and a process in communication with the digital data processors, wherein the process responds to a notification from one of the digital data processors requesting extension of the file system at the requesting digital data processor in accordance with a hierarchically defined file extension policy, wherein the hierarchically defined extension policy indicates a hierarchical arrangement of groups of attributes for configuring the extension of the file system, and wherein the process adds storage to the file system of the requesting digital processor to implement the request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor.

The Examiner cited col. 5, lines 20-21 of Lagueux as disclosing the claim requirement of the process responding to a notification on behalf of at least a selected one of the digital data processors for extension of the file system in accord with a hierarchically defined file extension policy. (Final Office Action, pg. 2) Applicants traverse.

The cited col. 5 mentions that a SAN can be used to provide storage services. Nowhere does this cited col. 5 anywhere disclose or mention extending a file system in a SAN with a hierarchically defined file extension policy as claimed.

The Examiner further cited col. 7, lines 50-52. (Final Office Action, pgs. 3-4) The cited col. 7 discusses a LUN that specifies a subcomponent of a target ID. Nowhere does this cited col. 7 anywhere disclose or mention extending a file system in a SAN with a hierarchically defined file extension policy.

The Examiner then proceeds on pages 3-4 of the Final Office Action to discuss what he believes to be inherent features of Lagueux, such as a file system, the use of different types of storage, each medium employing its own set of possible file systems, etc. The Examiner further mentions the nodes of Lagueux must have processors and that the storage units must each possess a processor.

Even if nodes have processors and storage devices may be configured with different file systems, nowhere in this discussion of "inherent" aspects of Lagueux or in the cited Lagueux is

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there any anywhere disclose or mention of extending a file system in a SAN with a hierarchically defined file extension policy as claimed.

The Examiner cites col. 24, line 12 of Lagueux for hierarchically distributed storage elements. (Final Office Action, pg. 4) The cited col. 24 mentions that storage elements are defined using a tree structure. This cited tree structure is defined as "mirror to stripes to disks" to allow the user to build-up storage in an organized manner. Further, the hierarchical tree shown in FIG. 22 of Lagueux is just a hierarchical display of components of a storage system, such as the storage devices in different pools and stripes. Nowhere is there any disclosure or mention in the cited Lagueux of a hierarchical arrangement of groups of attributes for configuring the extension of the file system. Nowhere is there any disclosure of the claim requirement of extending a file system in a SAN with a hierarchically defined file extension policy. There is no mention that the cited "tree structure" provides the claimed hierarchically defined file extension policy, such that processors request extension of the file system according to the hierarchically defined file extension policy. Instead, the hierarchy in the cited Lagueux is a hierarchy of storage elements and devices, not file extension policy attributes as claimed.

The Examiner further cited col. 21, line 60 to col. 22, line 20 of Lagueux. (Final Office Action, pg. 4) as teaching the claim requirements. Applicants traverse.

The cited cols. 21-22 mention a single intelligent coordination point for configuration of server access to storage, and that little or no hardware reconfiguration is necessary for adding new devices. The configuration allows automatic maintenance of the mapping of data sets in physical storage. The cited cols. 21-22 discuss various storage management operations. Nevertheless, the cited cols. 21-22 still nowhere disclose or mention the claimed hierarchically defined file extension policy of a hierarchical arrangement of groups of attributes for configuring the extension of the file system. Further, nowhere is there disclosure of the claim requirement that storage is added for a request for the extension of the file system according to the attributes in the at least one group of attributes associated with the requesting digital data processor. The cited storage configuration of Lagueux does not disclose the use of a hierarchically defined file extension policy as claimed having a hierarchical arrangement of groups of attributes.

The Examiner further cited col. 6, line 14 and col. 24, line 12 of Lagueux with respect to the claim requirements. (Final Office Action, pgs. 3-4) The cited col. 6 mentions that a server may have application specific processors and col. 24 mentions that a user launches a storage manager routine that displays an image of storage elements. FIG. 22 shows a hierarchical

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display of storage elements, such as the storage capacity of different storage elements, such as LUNs, disks, etc. Although the cited Lagueux discusses displaying a hierarchical arrangement of storage elements and devices, nowhere does the cited Lagueux anywhere disclose or mention extending a file system in a SAN with a hierarchically defined file extension policy. The display of hierarchically arranged storage elements such as in the cited FIG. 22 is different from and does not disclose the claimed hierarchically defined extension policy indicating a hierarchical arrangement of groups of attributes for configuring the extension of the file system, wherein digital data processors are associated with at least one group of attributes. Display of physical storage space is different from groups of attributes defining a policy used to configure extensions to file systems in response to notifications from one of the digital processors.

In the Response to Arguments the Examiner again cited cols. 21-22, discussed above. (Final Office Action, pg. 23) Again, although the cited cols. 21-22 discuss how storage devices may be configured for server access, nowhere is there any mention or disclosure of a hierarchically defined file extension policy as claimed.

Accordingly, amended claim 1 is patentable over the cited art because the cited Lagueux does not disclose all the claim requirements.

Claims 2-4 and 6 are patentable over the cited art because they depend from claim 1. Moreover, the following dependent claims provide additional grounds of patentability over the cited art.

Claim 2 depends from claim 1 and further requires that the groups of attributes include a first group at a first hierarchical level and a second group at a second hierarchical level, wherein the first hierarchical level is hierarchically above the second hierarchical level, and wherein the requesting digital data processor is in the first and second groups, and wherein the first group includes at least one digital data processor other than the requesting digital data processor.

The Examiner cited col. 24, line 12 of Lagueux as disclosing the requirements of claim 2. (Final Office Action, pg. 4) Applicants traverse.

The cited col. 24 discusses a hierarchical display of storage elements. As discussed, the cited display of storage elements is different from and does not disclose hierarchical groupings of attributes to extend a file system by adding storage space. The cited col. 24 discusses a display of storage elements in a hierarchical tree. Nowhere is there any disclosure of a hierarchical grouping of attributes to extend a file system as claimed. Further, nowhere does the cited col. 24 disclose the additional requirements of claim 2 concerning how the digital data processors may

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be associated with different groups of attributes at hierarchical levels used to configure file system extensions.

Accordingly, claim 2 provides additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim.

Claim 3 depends from claim 1 and further requires that the first group is associated with a first set of file extension configuration attributes defining a default policy for digital data processors associated with that group and wherein the second group is associated with a second set of one or more file extension configuration attributes, wherein a definition of an attribute in the second set overrides a definition for that attribute in the first set, wherein the configuration attributes of the second set, taken in conjunction with non-overridden configuration attributes of the first set, define a policy for the second group. The process configures the file extension on behalf of the requesting digital data processor using the attributes defined for the second group.

The Examiner cited col. 7, lines 20-30 of Lagueux as disclosing the requirements of claim 3. (Final Office Action, pg. 4) Applicants traverse.

The cited col. 7 discusses a management interface for managing an ISAN server. The management interface contains rule based management of the system including scheduling, process orchestration, handling processes and events, etc. One module provides rules for configuring and maintaining the ISAN server.

Although the cited col. 7 discusses rules for configuring the ISAN server, nowhere does the cited col. 7 anywhere disclose the claim requirements concerning a hierarchical file extension policy including extension including a first group of configuration attributes defining a default policy for digital data processors associated with that group and a second group having a second set of one or more file extension configuration attributes. Nowhere does the cited col. 7 anywhere disclose or mention the claimed details of a hierarchical file extension policy providing attributes used to configure a requested file extension for a digital data processor.

The Examiner states that the cited rules of Lagueux are "equivalent to the claimed policies" (Final Office Action, pg. 5) Applicants traverse.

The cited col. 7 discusses rules for configuring an ISAN server. These are entirely different rules than the claimed groups of hierarchically arranged file extension attributes, where a first group defines a default policy and the second group is associated with a second set of file extension configuration attributes. The cited rules of col. 7 do not disclose the claimed hierarchical groups of file extension policies.

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Accordingly, claim 3 provides additional grounds of patentability over the cited art because the cited art does not disclose the additional requirements of this claim.

Claim 4 depends from claim 2 and further requires that the attributes are a member of the set of attributes comprising a utilization threshold above which file system extension is requested, one or more storage devices accessible for file system extension, a range of storage capacities for accessible storage devices to be assigned for file system extension, maximum file system size, a flag indicating whether file system utilization is monitored, and an alert interval for notifying a SAN administrator of a file system utilization exceeding a threshold since a previous notification.

The Examiner cited col. 6, lines 57-58 and col. 8, line 51 to col. 9, line 2 of Lagueux as disclosing the additional requirements of these claims. (Final Office Action, pg. 5) Applicants traverse.

The cited col. 6 discusses software modules to support configuration in a SAN. The cited cols. 8-9 discusses storage routing such that the ISAN server can be added to the SAN between a server and storage to provide new functionality. The ISAN server acts as a storage router for storage transactions, and can direct backups and archiving. The ISAN server can migrate data to a new array when a new drive is added.

Although the cited cols. 8-9 discuss how an ISAN server can migrate data in a new array brought into the network, nowhere does the cited cols. 8-9 disclose the specific attributes used to configure storage added to extend a file system, where the attributes have a hierarchical arrangement.

The Examiner again cited col. 24, line 12 of Lagueux which shows a hierarchical tree of storage elements. However, as discussed, this cited hierarchical tree is of storage devices and their arrangement, not of groups of file extension attributes as claimed.

Claim 16 includes the requirements of claim 1 in a method form. The Examiner cited the same sections of Lagueux cited against claim 1 (Final Office Action, pgs. 6-8). Applicants submit claim 16 is patentable over the cited art for the reasons discussed with respect to claim 1.

Claim 18 includes the requirements of claim 4 in method form and thus provides additional grounds of patentability over the cited art for the reasons discussed above with respect to claim 4.

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Claims 19 and 20, which depend from claim 16, provide further details on the hierarchical arrangement of groups and thus provide further grounds of patentability over the cited Lagueux, which does not disclose a hierarchical file extension policy.

Claim 21 depends from claim 16 and includes the requirements of claim 2 in method form. Claim 21 is patentable over the cited art for the reasons discussed with respect to claim 2.

Claims 22, 26, and 32 depend from claims 1, 16, and 29 and further require that digital data processors associated with one group of attributes are also associated with all groups of attributes at hierarchically higher levels than the group with which the digital data processor is associated.

The Examiner cited col. 7, lines 50-52, col. 8, line 51 to col. 9, line 20, col. 24, line 12, and col. 21, line 60 to col. 22, line 20 of Lagueux as teaching the additional requirements of these claims. (Final Office Action, pg. 12) These sections were discussed above. In the above discussions, Applicants noted that the cited Lagueux nowhere discloses a hierarchically defined file extension policy of a hierarchical arrangement of groups. Further, nowhere does the cited Lagueux anywhere disclose that digital data processors associated with one group of attributes are also associated with all group of attributes at hierarchically higher levels. There is no disclosure in the cited Lagueux of associating processors with different groups of file extension policy attributes arranged hierarchically.

Accordingly, claims 22, 26, and 32 provide additional grounds of patentability over the cited art in addition to being patentable over the cited art for depending from claims 1, 16, and 29, which are patentable over the cited art for the reasons discussed.

Claims 23, 27, and 33 depend from claims 1, 16, and 29 and further require that the attributes the process uses to configure the file extension for the requesting digital processor include attributes in the at least one group associated with the requesting digital processor, wherein a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

The Examiner cited the rules of Lagueux on col. 7, lines 20-30 as teaching the claimed file extension policies. (Final Office Action, pg. 13)

The cited col. 7 discusses a management interface for managing an ISAN server. The management interface contains rule based management of the system including scheduling, process orchestration, handling processes and events, etc. One module provides rules for configuring and maintaining the ISAN server.

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Although the cited col. 7 discusses rules for configuring the ISAN server, nowhere does the cited col. 7 anywhere disclose that the attributes used to configure the file extension include attributes in at least one group associated with the requesting digital process and that a definition of one attribute at a lower hierarchical level is used over a definition of the attribute at one higher hierarchical levels.

The above discussed and cited col. 24 and cols. 21-22 also does not disclose that attributes of a group associated with the requesting digital processor are used to configure a file extension policy.

Accordingly, claims 23, 27, and 33 are patentable over the cited art because they depend from base claims 1, 16, and 29, which are patentable over the cited art for the reasons discussed, and because their additional requirements provide further grounds of patentability over the cited art.

Claims 24, 28, and 34 depend from claims 1, 16, and 29 and further require that at least one group comprises a host group policy defining attributes for configuring an extension to all file systems within each digital data processor associated with the host group policy, and wherein at least one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy.

The Examiner cited the above discussed cols. 7, 24, and 21, which discuss rules for configuring an ISAN server and a hierarchical display of storage elements. Nowhere in these cited sections of Lagueux is there any disclosure or mention of a host group policy defining attributes for configuring an extension and that one group comprises a file system policy defining attributes for configuring a specified file system within each digital data processor associated with the file system policy. There is no mention in the cited Lagueux of the claimed file extension configuration policies.

Accordingly, Applicants submit that claims 24, 28, and 34 are patentable over the cited art because they depend from base claims 1, 16, and 29, which are patentable over the cited art for the reasons discussed, and because their additional requirements provide further grounds of patentability over the cited art.

Claim 25 depends from claim 21 and includes the requirements of claim 3. Applicants submit that claim 25 is patentable over the cited art for the reasons discussed with respect to claim 3.

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Claims 29-31 include the requirements of claims 16, 18, 21 in computer readable format form and thus are patentable over the cited art for the reason discussed with respect to claims 16, 18, and 21.

Conclusion

For all the above reasons, Applicant submits that the pending claims 1-4, 6, 16, and 18-34 are patentable over the art of record. Applicants submit herewith the fee for the claim amendments. Nonetheless, should any additional fees be required, please charge Deposit Account No. 09-0466.

The attorney of record invites the Examiner to contact him at (310) 553-7977 if the Examiner believes such contact would advance the prosecution of the case.

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